Remarks

Claims 1 – 12 were previously canceled. Claims 13-26 were pending in this application. Claims 17-24 have been withdrawn in response to the Examiner's requirement for the election of one type of pain for treatment. Applicants reserve the right to pursue the subject matter of the withdrawn claims in one of more divisional applications. Claim 13 has been amended in response to the Examiner's restriction requirement. Claims 16, 25, and 26 have been amended to correct formal errors. Therefore, claims 13-16, 25, and 26 are now pending in this application.

Initially, Applicants solicit the Examiner's kind assistance in correcting the Patent Office records to reflect the change in attorney and correspondence address which were requested in the Applicants' previous response. Despite the filing in Applicants' previous submission of a revocation by the assignee of the previous attorney's power of attorney, as well as the filing of both a new power of attorney and a change in correspondence address, nevertheless the current Office Action was mailed to the previous representative. Copies of the previously filed revocation of power of attorney, new power of attorney, and change in correspondence address are herein enclosed for the Examiner's convenience, and he is thanked in advance for his assistance in this matter.

In the Office Action dated May 23, 2005, the Examiner imposed a requirement under 35 U.S.C. §121 for election of one species of pain. Applicants hereby elect the species designated by the Examiner as "(i) neuralgia pain," which is also known as "neuropathic pain." Applicants have attached herein a printout from Wikipedia, the on-line encyclopedia, to document that neuralgia pain is equivalent to neuropathic pain. With the current amendment to claim 13, all currently pending claims now read on the elected species. Support for claims directed to neuralgia pain is found in original claim 6. Applicants reserve the right to pursue the subject matter that has been excluded from amended claim 13, as well as that of the withdrawn claims, in one or more divisional applications.

Specifically, Applicants have amended independent claim 13 so that it is now directed to "neuralgia pain, also known as neuropathic pain." As indicated above, support for neuralgia pain is found in original claim 6.

Claim 16 has been amended to recite "method of," rather than "use as claimed in," to correspond to the language in claim 13, from which it depends.

Claims 25 and 26 have been amended to correct the obvious error in dependency.

The Examiner's effort to reach the undersigned by telephone prior to the issuance of the current Office Action is gratefully acknowledged.

In view of the foregoing amendments, withdrawal of claims, and remarks, Applicants respectfully submit that this application is now in condition for allowance, which action is earnestly solicited.

Respectfully submitted,

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Neuropathy

From Wikipedia, the free encyclopedia
(Redirected from Neuropathic pain)

Neuropathy strictly speaking is any disease that affects the neurons of the nervous system. In practice it is recognized as a peripheral disorder, potentially affecting nerves anywhere except the brain or the spinal cord.

Neuropathy

ICD-10	G56-G63, G90.0, G99.0
ICD-9	337.0 (http://icd9.chrisendres.com/index.php?action=search&srchtext=337.0)-337.1 (http://icd9.chrisendres.com/index.php?action=search&srchtext=337.1), 356 (http://icd9.chrisendres.com/index.php?action=search&srchtext=356)-357 (http://icd9.chrisendres.com/index.php?action=search&srchtext=357), 377 (http://icd9.chrisendres.com/index.php?action=search&srchtext=377)

Contents

Types

The four major forms of nerve damage are polyneuropathy, autonomic neuropathy, mononeuropathy, and mononeuritis multiplex. The most common form is peripheral polyneuropathy, which mainly affects the feet and legs.

Causes

Besides diabetes, the common causes of neuropathy are herpes zoster infection, chronic or acute trauma (including surgery), and various neurotoxins. Neuropathic pain is common in cancer as a direct result of the cancer on peripheral nerves (e.g., compression by a tumor), as a side effect of many chemotherapy drugs, and as a result of electrical injury.

Symptoms

Neuropathy often results in numbness, abnormal sensations called dysesthesias and allodynias that occur either spontaneously or in reaction to external stimuli, and a characteristic form of pain, called neuropathic pain or neuralgia, that is qualitatively different from the ordinary nociceptive pain one might

experience from stubbing a toe or hitting a finger with a hammer. Neuropathic pain is usually perceived as a steady burning and/or "pins and needles" and/or "electric shock" sensations. The difference is due to the fact that "ordinary" pain stimulates only pain nerves, while a neuropathy often results in the firing of both pain and non-pain (touch, warm, cool) sensory nerves in the same area, producing signals that the spinal cord and brain do not normally expect to receive.

Treatment of Neuropathic Pain

Neuropathic pain can be very difficult to treat; sometimes strong opioid analgesics aswell as cannabis may provide only partial relief. Opoid analgesics are to be considered only as a tertiary treatment. Several classes of medications not normally thought of as analgesics are often effective, alone or in combination with opioids and other treatments. These include tricyclic antidepressants such as amitriptyline (Elavil®), anticonvulsants such as gabapentin (Neurontin®) and pregabalin (Lyrica®) and serotonin norepinephrine reuptake inhibitors (SSNRI such as duloxetine (Cymbalta®)).

In animal models of neuropathic pain (Bennett & Xie, Pain 33, 87-107 (1988); Seltzer et al., Pain 43, 205-18 (1990); Kim & Chung, Pain 50, 355-63 (1992); Malmberg & Basbaum, Pain 76, 215-22 (1998); Sung et al., Neurosci Lett 246, 117-9 (1998) ; Lee et al., Neuroreport 11, 657-61 (2000); Decosterd & Woolf, Pain 87, 149-58 (2000); Vadakkan et al., J Pain 6, 747-56 (2005), compounds that only block serotonin reuptake do not improve neuropathic pain. Similarly, compounds that only block norepinephrine reuptake also do not improve neuropathic pain. Compounds such as dulexetine, venlafaxine, and milnacipran that block both serotonin reuptake and norepinephrine reuptake do improve neuropathic pain. Antidepressants usually reduce neuropathic pain more quickly and with smaller doses than they relieve depression. Antidepressants therefore seem to work differently on neuropathic pain than on depression, perhaps by activating descending norepinephrinergic and serotonergic pathways in the spinal cord that block pain signals from ascending to the brain.

The newer anticonvulsants gabapentin and pregabalin appear to work by blocking calcium channels in damaged peripheral neurons. Tricyclic antidepressants may also work on sodium channels in peripheral nerves. The anticonvulsants carbamazepine (Tegretol®) and oxcarbazepine (Trileptal®), especially effective on trigeminal neuralgia, are thought to work principally on sodium channels.

In general, the antidepressants seem to be most effective on continuous burning pain, while the anticonvulsants seem to work best on sudden, lancinating, "shock-like" pains that appear to involve large numbers of peripheral nerves improperly firing together.

In some forms of neuropathy, especially post-herpes neuralgia, the topical application of local anesthetics such as lidocaine can provide relief. A transdermal patch containing 5% lidocaine is available. Ketamine in a transdermal gel is also frequently effective when the neuropathy is localized. Neurontin 100mg/g PLO gel is alos effective for treating peripheral neuropathy, including Carpul Tunnel Syndrome.

In some neuropathic pain syndromes, "crosstalk" occurs between descending sympathetic nerves and ascending sensory nerves. Increases in sympathetic nervous system activity result in an increase of pain; this is known as sympathetically-mediated pain. Reducing the sympathetic nerve activity in the painful region with local nerve blocks or systemic medications such as clonidine may provide relief.

The NMDA receptor seems to play a major role in neuropathic pain and in the development of opioid tolerance, and many experiments in both animals

and humans have established that NMDA antagonists such as ketamine and dextromethorphan can alleviate neuropathic pain and reverse opioid tolerance. Unfortunately, only a few NMDA antagonists are clinically available and their use is usually associated with unacceptable side effects.

Several opioids, particularly methadone, have NMDA antagonist activity in addition to their μ-opioid agonist properties that seems to make them effective against neuropathic pain, although this is still the subject of intensive research and clinical study. Methadone has this property because it is a racemic mixture; one stereo-isomer is a μ-opioid agonist; the other is a NMDA antagonist.

See also

- phantom limb

Neuropathy related organizations

1. Special Interest Group on Neuropathic Pain (http://www.neupsig.org/)of the International Association for the Study of Pain (IASP) (http://www.iasp-pain.org/)

External links

1. A neuropathic series of articles from a neurologist who researches neuropathic pain (http://www.loftusmd.com/Articles/Pain/overview.html)

Retrieved from "http://en.wikipedia.org/wiki/Neuropathy"

Categories: Neurology